

REMARKS

Favorable reconsideration of the present application, in light of the present amendments and following discussion, is respectfully requested.

Claims 1-26 are presently pending; Claims 1, 6, 9-11, 16, 21, and 22 have been amended; no claims have been cancelled; and no claims have been newly added herewith. Applicant respectfully submits that no new matter has been added by the present amendment.

Applicant thanks Examiner Pham for the interview granted Applicant's representative on August 23, 2002. During the interview, Aoki et al. (U.S. Pat. No. 6,366,384, hereafter "Aoki") and Makino (U.S. Pat. No. 6,320,647) were discussed with regard to Claims 1, 6, 11, 16, and 21. During the interview, Applicant's representatives argued that Aoki and Makino may not be applied to the present application as prior art, as they are subject to common assignment or inventorship and did not issue as patents prior to Applicant's filing date.

Specifically, the present application claims a United States filing date of March 30, 2001. Aoki, which was filed June 15, 1999, and issued April 2, 2002, is not available as prior art against the present application under 35 U.S.C. § 103, because both Aoki and the present application are assigned to Ricoh Company. Similarly, Makino was filed July 28, 1999, and issued November 20, 2001. The inventorship of Makino and the present invention are identical, and so Makino could only be applied as prior art under 35 U.S.C. § 102(b). Because the present application was filed on March 30, 2001, Makino may not be applied to the present application. During the interview, it was agreed that these two references may not be applied to the present application, and Examiner Pham indicated that he would withdraw this rejection.

Further, Applicant's representatives argued that Claims 1 and 6 are not duplicates of each other. Specifically, Claim 6 recites, "a recording medium," which is not positively

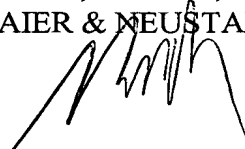
recited in independent Claim 1. Accordingly, it was agreed during the interview that Claims 1 and 6 are not duplicate claims, and Examiner Pham agreed to withdraw the duplicate claims objection.

Accordingly, in light of the discussion at the interview, Applicant respectfully submits that the pending claims patentably distinguish over the references of record.

Consequently, in light of the foregoing discussion and present amendments, Applicant respectfully submits that the pending claims are in condition for immediate allowance. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

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IN THE SPECIFICATION

Please amend the paragraph at page 3, line 25, to page 4, line 18, as follows:

Briefly these objects and other objects of the present invention as hereinafter will become more readily apparent can be attained by a multi-beam scanning device including a light emitting array, e.g., a laser diode array which serves as a light source and in which three or more light emitting elements (hereinafter referred to as "points") are arranged (e.g., integral or in a package) at predetermined locations, e.g., at predetermined distances from each other, e.g., at an equal interval, wherein the three or more light emitting points emit respective light beams (hereinafter referred to only as an example as "laser beams") which form laser beam spots on a recording medium, wherein the three or more laser beams scan the recording medium in a main scanning direction while being put on and off to form a light image having a minimum recording interval on the recording medium, wherein the interval between one of the light emitting points and the adjacent light emitting point is not greater than the minimum recording interval, and wherein the light emitting points are arranged such that the three [of] or more laser beam spots on the recording medium are arranged in a line or substantially in a line in a direction orthogonal to the main scanning direction.

Please amend the paragraph at page 9, lines 5-12, as follows:

The receiving paper P is then fed upward in the main body 30. When the leading edge of the receiving paper P strikes a registration roller 54, the paper is stopped there [at] for a moment. Then the receiving paper P is timely fed by the registration roller 54 such that the toner image formed on the photoreceptor drum 16 is accurately transferred on a proper position of the receiving paper P. Thus, the toner image on the photoreceptor drum 16 is transferred onto the receiving paper P.

Please amend the paragraph at page 11, lines 7-8, as follows:

The regulated laser beams [reaches] reach a polygon mirror 12 after passing through a cylinder lens 11 and a mirror 18.

IN THE CLAIMS

1. (Amended) A multi-beam scanning device comprising:

a laser diode array having at least three light emitting points arranged in a package at an equal interval and configured to emit respective laser beams that form corresponding laser beam spots on a recording medium at a minimum recording interval, wherein

the laser beams from the at least three light emitting points scan the recording medium in a main scanning direction while being at least one of on and off so as to form a light image having the minimum recording interval in the recording medium,

the equal interval is not greater than the minimum recording interval, and

the at least three light emitting points are arranged such that the corresponding laser beams spots on the recording medium are arranged [in at least one of in a line and] substantially in a line in a direction orthogonal to the main scanning direction.

6. (Amended) An image forming apparatus comprising:

a recording medium; and

a laser diode array having at least three light emitting points arranged in a package at an equal interval and configured to emit respective laser beams that form corresponding laser beam spots on the recording medium at a minimum recording interval, wherein

the laser beams from the at least three light emitting points scan the recording medium in a main scanning direction while being at least one of on and off so as to form a light image having the minimum recording interval on the recording medium,

the equal interval is not greater than the minimum recording interval, and

the at least three light emitting points are arranged such that the corresponding laser beam spots on the recording medium are arranged [at least one of in a line or] substantially in a line in a direction orthogonal to the main scanning direction.

9. (Amended) The image forming apparatus according to Claim [5] 6, wherein a variation in position of the lower beam spots configured to be arranged substantially in a line is not greater than 21.17 μm .

10. (Amended) The image forming apparatus according to Claim [5] 6, wherein the equal interval is not greater than 14 μm .

11. (Amended) A multi-beam scanning device comprising:

a laser emitting means for emitting laser beams, comprising at least three light emitting points arranged in a package at an equal interval and configured to emit the at least three laser beams to form corresponding laser beam spots on a recording medium at a minimum recording interval,

wherein the laser beams from the at least three light emitting points scan the recording medium in a main scanning direction while being at least one of on and off so as to form a light image having the minimum recording interval on the recording medium,

the equal interval is not greater than the minimum recording interval, and

the at least three light emitting points are arranged such that the corresponding laser beam spots on the recording medium are arranged [in at least one of a line and] substantially in a line in a direction orthogonal to the main scanning direction.

16. (Amended) An image forming apparatus comprising:

means for recording data thereon; and

means for emitting laser beams, comprising at least three light emitting points arranged in a package at an equal interval and for emitting laser beams to form corresponding laser beam spots on the means for recording at a minimum recording interval,

wherein the laser beams scan the means for recording in a main scanning direction while being at least one of on and off so as to form a light image having the minimum recording interval on the means for recording,

the equal interval is not greater than the minimum recording interval, and

the at least three light emitting points are arranged such that the corresponding laser beam spots on the means for recording are arranged [at least one of in a line and] substantially in a line in a direction orthogonal to the main scanning direction.

21. (Amended) A multi-beam scanning device comprising:

a light beam emitting array comprising three or more light emitting elements, which are arranged at predetermined locations and which emit respective laser beams to form corresponding laser beam spots on a recording medium at a minimum recording interval,

wherein the three or more laser beams scan the recording medium in a main scanning direction while being put on or off to form a light image having the minimum recording interval on the recording medium,

wherein the three or more light emitting elements are arranged such that the corresponding laser beam spots on the recording medium are arranged [in a line or] substantially in a line in a direction orthogonal to the main scanning direction.

22. (Amended) The multi-beam scanning device according to Claim 21, wherein the predetermined locations of the three or more light emitting elements are such that the elements are arranged at an equal interval and the equal interval is not greater than the minimum recording interval, and

wherein the equal interval is P_i and [wherein] P_i is set to fulfill the following equation:

$$P_i = (f_{co}/f_{cy}) \cdot (P_i'/\beta_s),$$

wherein f_{co} is the focal length of a light collecting element [(5)], which collects the light emitted from the light beam emitting array,

f_{cy} is the focal length of a light beam shaping element, said light beam shaping element shaping the light beam passing through the light collecting element before the light beam is reflected by a light beam deflecting element, said light beam deflecting element deflects the light beams for scanning the recording medium,

wherein β_s is the lateral direction magnification in the sub-scanning direction, and

wherein P_i' is the minimum recording interval.